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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,376	10/23/2003	Suan Jeung Boon	5353.1US (02-0240.01/US)	1671
24247	7590	01/11/2006	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			HAFIZ, MURSA LIN B	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/693,376

**Applicant(s)**

BOON ET AL.

**Examiner**

Mursalin B. Hafiz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26-29 is/are allowed.
- 6) ☒ Claim(s) 1,9-13,15,20,24 and 25 is/are rejected.
- 7) ☒ Claim(s) 2-8,14,16-19 and 21-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/29/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Information Disclosure Statement***

The Supplemental Information Disclosure Statement filed on August 29, 2005 is herein made of record.

### ***Response to Amendment***

Amendment filed on December 5, 2005 is acknowledged. Claims 1-6, 12, 15, 17, 20, and 22 were amended and new claims 26-29 are added.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vittu et al (US 6,713,876 B1) in view of Glenn et al (US 6,455,927 B1) and Muramatsu et al (US 6,703,598 B2).

Regarding claim 1, Vittu discloses, in column 2 line 44 to column 3 line 23, Fig. 1 to 4, a method for assembling an electronic device package comprising:  
forming a package shell [column 2 line 44, (2)] having an aperture [through-passage 5] formed in a first surface thereof and a second-side cavity [annular hollow or countersink 7] formed in a second surface thereof and in communication with the aperture, the second-side cavity having an outside perimeter that is larger than an outside perimeter of the aperture to form a cavity top surface in the bottom-

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side cavity [see fig 3, label 2];  
mounting an optically interactive microelectronic device [Fig.1, label 4 and 13 combined]  
having an active surface within the second-side cavity such that at least a portion  
of the active surface is exposed through the aperture [Fig. 3, column 3 line 1-6]  
depositing a transparent encapsulant within the aperture to cover the at least a portion  
of the active surface exposed therethrough [column 2 line 64 and claim 1]; and  
covering the aperture with a transparent lid [Fig. 3 label 21, Column3 line 15-17]

However, Vittu does not disclose the formation of at least one pad on at least the second surface of the package shell. Glenn taught an analogous device where solder pad is formed on the bottom surface of the package [1112]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to form a solder pad on the bottom surface of the package of Vittu at least to connect the package with a external device, for example a printed circuit board [column 11 line 47- 63]. Vittu also does not disclose the second surface of the package shell protrudes beyond the optically interactive microelectronic device. Muramatsu taught an analogous device in Fig. 2 where the second surface [2C] of the package shell protrudes beyond the optically interactive microelectronic device [4]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to from the second surface of the package shell protrude beyond the optically interactive microelectronic device at least to properly secure the microelectronic device using back cover [Column 3 line 43-46].

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Regarding claim 9, Vittu teaches selecting the optically interactive microelectronic device to be an image sensor chip [column 3 line 3-5].

Regarding claim 10, Glenn discloses in fig. 11 the method of forming a package shell [1102] comprising ceramic [column 11 line 41-43].

Regarding claim 11, Vittu discloses the method of forming the transparent lid of glass [column 3, line 21-23].

2. Claims 12, 13, 20, 24, and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Vittu et al (US 6,713,876 B1) in view of Glenn et al (US 6,455,927 B1), Muramatsu et al (US 6,703,598 B2), and Nagano (US 5,357,056).

Regarding claim 12, Vittu discloses, in column 2 line 44 to column 3 line 23, Fig. 1 to 4, a method for assembling an electronic device package comprising:

forming a package shell [column 2 line 44, (2)] having an aperture [through-passage 5]

formed in a first surface thereof and a second-side cavity [annular hollow or countersink 7] formed in a second surface thereof and in communication with the aperture, the second-side cavity having an outside perimeter that is larger than an outside perimeter of the aperture to form a cavity first surface in the second-side cavity [see fig 3, label 2];

forming a ledge surface in the second surface of the package shell around the second-side cavity [Fig.3, surface of 7];

covering the aperture with a transparent lid [Fig. 3 label 21, Column3 line 15-17]

mounting an optically interactive microelectronic device [Fig.1, label 4 and 13 combined]

having an active surface within the second-side cavity such that at least a portion

of the active surface is exposed through the aperture [Fig. 3, column 3 line 1-6]. However, Vittu does not disclose the formation of at least one pad on at least the second surface of the package shell, the second surface of the package shell protrudes beyond the optically interactive microelectronic device, and covering the second-side cavity with a backing cap. Glenn taught an analogous device where solder pad is formed on the bottom surface of the package [1112]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to form a solder pad on the bottom surface of the package of Vittu at least to connect the package with a external device, for example a printed circuit board [column 11 line 47- 63]. Muramatsu taught an analogous device in Fig. 2 where the second surface [2C] of the package shell protrudes beyond the optically interactive microelectronic device [4]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to from the second surface of the package shell protrude beyond the optically interactive microelectronic device at least to properly secure the microelectronic device using back cover [Column 3 line 43-46]. Nagano teaches an analogous device in Fig. 3 where the bottom-side cavity is covered with a backing cap [15]. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate a backing cap in Vittu's device at least to secure the optical device properly.

Regarding claim 13, Glenn discloses in fig. 11 the method of forming a package shell [1102] comprising ceramic [column 11 line 41-43].

Regarding claim 20, Nagano discloses in fig. 3, backing cap comprising:  
formation of a compression member on the backing cap [15]

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back surface of the optically interactive microelectronic device [6] is in contact with the compression member.

Regarding claim 24, Vittu teaches selecting the optically interactive microelectronic device to be an image sensor chip [column 3 line 3-5].

Regarding claim 25, Vittu discloses the method of forming the transparent lid of glass [column 3, line 21-23].

3. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vittu et al (US 6,713,876 B1), Glenn et al (US 6,455,927 B1), Muramatsu et al (US 6,703,598 B2), and Nagano (US 5,357,056) as applied to claim 12 above and further in view of Jerominek et al (US 2003/0111441 A1).

Regarding claim 15, Jerominek discloses in analogous device in Fig. 4, forming a depression [43] in the top surface of the package shell [38]; and seating the transparent lid [42] within the depression.

#### ***Allowable Subject Matter***

4. Claims 2-8, 14, 16-19, and 21-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 2, the prior art does not teach a method of depositing a transparent encapsulant comprises depositing the transparent encapsulant to a level that fills the aperture and covers a portion of the top surface of the package shell surrounding the aperture. Claims 3-5 are dependant on claim 2. Regarding claims 14,

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16, and 21-23, the prior art does not teach integrally forming the transparent lid with the package shell during a ceramic firing process, hermetically bonding the transparent lid to the package shell with an adhesive material, forming at least one gold trace on the backing cap, hermetically sealing the backing cap to the ledge surface with an adhesive material, and forming the backing cap of a ceramic. Regarding claims 6,7, 17, and 18, prior art does not teach formation of at least one conductive element or bump on the active surface of the optically interactive microelectronic device. Claims 8 and 19 depend on claims 7 and 18.

5. Claims 26-29 are allowed.

Regarding claim 26, prior art does not teach method of depositing a transparent encapsulant within the aperture to a level that fills the aperture to a level that fills the aperture and covers a portion of the first surface of the package shell surrounding the aperture in combination with other limitations of the claim. Claims 27-29 depend on claim 26.

### ***Response to Arguments***

Applicant's arguments with respect to claim 1, 9-13, 20, 24, and 25 have been considered but are moot in view of the new ground(s) of rejection.



***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mursalin B. Hafiz whose telephone number is 571-272-8604. The examiner can normally be reached on m-f 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mbh

  
GEORGE ECKERT  
PRIMARY EXAMINER